

PATENT COOPERATION TREATY

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From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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04 MARS 2004

Cabinet HARLE et PHELIP

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

02.03.2004

Applicant's or agent's file reference
N405PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP 03/02480International filing date (day/month/year)
11.03.2003Priority date (day/month/year)
11.03.2002

Applicant

CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE...et

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the International
preliminary examining authority:

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Authorized Officer

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TENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)RECEIVED
05 MAR 2004

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| Applicant's or agent's file reference N405PCT | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) | |
| International application No. PCT/EP 03/02480 | International filing date (day/month/year) 11.03.2003 | Priority date (day/month/year) 11.03.2002 |
| International Patent Classification (IPC) or both national classification and IPC G01N21/21 | | |
| Applicant CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE...et | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:
- I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application

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|---|---|
| Date of submission of the demand 10.10.2003 | Date of completion of this report 02.03.2004 |
| Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized Officer Hoogen, R Telephone No. +49 89 2399-2192  |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/02480**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-24 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | |
|-------------------------------|-------------|------|
| Novelty (N) | Yes: Claims | 1-24 |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | 1-24 |
| Industrial applicability (IA) | Yes: Claims | 1-24 |
| | No: Claims | |

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/EP03/02480

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

D1: US-A-5 666 200

D2: LIM S-G ET AL., APPLIED PHYSICS LETTERS, vol. 79, no. 2, 9 July 2001, pages 162-164

D3: BREVILLON B, PROGRESS IN CRYSTAL GROWTH AND CHARACTERIZATION OF MATERIALS, ELSEVIER PUBLISHING, BARKING, GB, vol. 27, no. 1, 1993, pages 1-87

D4: US-B1-6 307 627

D5: US-A-5 237 447

2. **Independent method claim 1**

Document D1 is regarded as being the closest prior art to the subject-matter of independent method claim 1. It discloses a method of determining the Mueller matrix coefficients of a sample by polarimetric measurements, in which the sample located inside a chamber is illuminated by a polarised incident light beam produced by a polarisation state generator (PSG), the incident beam is reflected by the sample, analysed by a polarisation state detector (PSD) and then measured by detection means (cf. column 7, lines 3-20 and 60-61; column 8, lines 12-19). The spectral range of the incident beam ranges from near ultraviolet to infrared (cf. column 1, lines 22-27).

The method according to claim 1 differs from this disclosure in that

- i) the PSG, the PSD, the sample, and the detection means are located in at least one air tight chamber;
- ii) the spectral range of the incident beam ranges from far ultraviolet to visible;
- iii) the polarimetric measurements are performed under a low partial pressure of far ultraviolet highly absorbing gases; and
- iv) ultraviolet highly absorbing gases are evacuated by pumping down the at least one air tight chamber.

A technical problem may therefore be seen in extending the spectral range of the method disclosed in D1.

Document D2 describes a far UV spectroscopic ellipsometer working up to 9 eV. In order to avoid absorption of far ultraviolet light by oxygen and its radicals below 190nm, measurements are performed under a low partial pressure of far ultraviolet highly absorbing gases achieved by placing the system in a glove box purged by nitrogen gas (cf. page 162, paragraph bridging left and right column). A glove box is typically purged by repeatedly pumping it down and then refilling it with inert gas, e.g., nitrogen, until the air inside the box is completely replaced by the inert gas. Distinguishing features i)-iv) are therefore obvious in view of D1 in combination with D2.

The method according to claim 1 does therefore not meet the requirements of the PCT with respect to inventive step (Art. 33(3) PCT).

3. Independent apparatus claim 8

Document D1 is regarded as being the closest prior art to the subject-matter of independent apparatus claim 8. It discloses a polarimetric system for analysing a sample comprising:

- an excitation section (cf. figure 1, reference sign 2) for emitting a light beam (10) in the spectral range from near ultraviolet to infrared, said excitation section comprising a polarisation state generator (PSG, 23) and an optical system (22) for directing said beam onto the sample (1);
- a sample holder (cf. figure 3, reference sign 41); and
- an analysis section (3) comprising a polarisation state detector (PSD, 30) and detection means (34).

The apparatus according to claim 8 differs from this disclosure in that

- i) the polarimetric system comprises at least one air tight chamber containing the excitation section, the analysis section and the sample holder;
- ii) the light beam emitted by the excitation section is in the spectral range from far ultraviolet to visible;
- iii) the light beam propagates through the excitation section up to through the analysis section under a low partial pressure of far ultraviolet highly absorbing

gases; and

iv) said at least one air tight chamber comprises a pumping station and pressure monitoring means.

A technical problem may therefore be seen in modifying the apparatus of D1 such that it is applicable in an extended spectral range.

Distinguishing features i)-iv) are not considered to be inventive in view of D2, the argumentation begin analogous to the argumentation given for claim 1 (Art. 33(3) PCT).

4. Dependent claims

The additional technical features of claims 2-4 are known from or at least fairly suggested by D2 (cf. page 162).

The additional technical features of claims 5-7 are considered to be obvious in view of D1 (cf. column 2, line 50 - column 3, line 7; column 4, lines 26-35) in combination with D3 (cf. sections II.2 and II.4.1), which D1 directly refers to.

The additional technical features of claims 9, 10, 13, 14, and 24 are known from or at least fairly suggested by D2 (cf. page 162).

The additional technical features of claims 11 and 12 are obvious in view of D4 (cf. column 7, lines 47-53).

The additional technical features of claims 16 and 17 are known from D1 (cf. column 4, lines 55-58; column 5, lines 44-47).

The additional technical features of claims 19 and 23 are obvious in view of D5 (cf. column 1, lines 22-25 and 56-58).

The additional technical features of claims 15, 18, and 20-23 are considered to fall within the normal range of options envisaged by the person skilled in the field of polarimetric measurements.

**INTERNATIONAL PRELIMINARY
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Further remarks

1. The independent claims are not properly delimited against D1 using the two-part form (Rule 6.3(b) PCT).

The features of the claims are not provided with reference signs (Rule 6.2(b) PCT).

The relative term "low partial pressure" used in independent method claim 1 and in independent apparatus claim 8 has no well-recognised meaning in the art of polarimetric measurements, thereby rendering the claims unclear (Art. 6 PCT, PCT Guidelines, III-4.5).

2. The description is not in conformity with the claims (Rule 5.1(a)(iii) PCT).

Documents D1-D3 are not mentioned in the description nor is the relevant background art disclosed therein discussed (Rule 5.1(a)(ii) PCT).
